EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

1. Berkley Avenue - This project consists of installation of approximately 300 LF of 8" PVC sewer. The disturbed area is in the asphalt within the right-of-way.
2. Norfolk 600 Block - This project consists of installation of approximately 500 LF of 12" sewer. The entire waterline is within the roadway and the majority of the sewer is within paved areas. The disturbed area is 0.06 acres based on a disturbed width of 20 feet for sewer line outside of paved areas.
3. Tinker Creek Siphon - This project consists of installation of approximately 120 LF of 8" sewer line and 118 LF of 6" sewer line and a creek crossing. The disturbed area is 0.07 acres based on a disturbed width of 20 feet centered on the sewer line.
4. Brandon Avenue - This project consists of installation of approximately 480 LF of 8" PVC sewer and 500 LF of 6" waterline. The disturbed area is 0.06 acres based on a disturbed width of 5 feet along the length of the waterline. The waterline is running along the edge of the concrete sidewalk so it was assumed that 5 feet outside of the sidewalk toward the residential homes would be disturbed.
5. 15th Street Interceptor - This project consists of installation of approximately 190 LF of 8" PVC sewer. The disturbed area is 0.09 acres based on a disturbed width of 20 feet centered on the sewer line.
6. Kerns Avenue - This project consists of installation of approximately 120 LF of 12" PVC sewer. The disturbed area is 0.06 acres based on a disturbed width of 20 feet centered on the sewer line.

EXISTING SITE CONDITIONS: Existing conditions are shown on the attached plan sheets.

ADJACENT PROPERTY: Ownership, tax map number, relevant easement references, streams and roads are shown for each adjacent and/or affected property.

OFF-SITE AREAS: This project will result in a "balanced" site and no excess material will be exported nor will any material be imported from other properties. If off-site areas are required the location of all off-site fill, borrow, and/or staging areas associated with the construction of this project shall be provided to the WVWA prior to the pre-construction meeting. An ESC plan or measures may be required for these areas.

SOILS:

The following soils information is according to the SCS soils information from the NRCS Web Soil Survey:

1. Berkley Avenue - This project consists of Chiswell-Litz-Urban land complex, 2 to 15 percent slopes and Chiswell-Litz-Urban land complex, 15 to 35 percent slopes.
2. Norfolk 600 Block - This project consists of Udorthents-Urban land complex and Urban land
3. Tinker Creek Siphon - This project consists of Shottower-Urban land complex, 2 to 15 percent slopes, Urban land and Water.
4. Brandon Avenue - This project consists of Chiswell-Litz-Urban land complex, 15 to 35 percent slopes.
5. 15th Street Interceptor - This project consists of Combs loam, 0 to 2 percent slopes, occasionally flooded and Speedwell-Urban land complex, 0 to 2 percent slopes, occasionally flooded.
6. Kerns Avenue - This project consists of Chiswell-Litz-Urban land complex, 25 to 50 percent slopes, Speedwell-Urban land complex, 0 to 2 percent slopes, occasionally flooded and water.

CRITICAL EROSION AREAS: Early establishment and proper maintenance of perimeter controls will provide sedimentation control. Stabilize and maintain ditches and fill slopes throughout project construction to control erosion.

STRUCTURAL PRACTICES

SILT FENCE - 3.05: Silt fence sediment barriers shall be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow as indicated.

STORM DRAIN INLET PROTECTION - 3.07: Stone filters shall be placed at the inlet of all drainage structures as indicated.

TREE PROTECTION - 3.38: A fence barrier is to be placed around the trees and vegetated areas, which will not be disturbed, to protect the trees and other vegetation from construction equipment and soil compaction.

VEGETATIVE PRACTICES

TEMPORARY SEEDING - 3.31: All denuded areas which will be left dormant for more than 30 days shall be seeded with fast germinating temporary vegetation immediately following grading of those areas. Selection of the seed mixture shall depend on the time of year it is applied.

PERMANENT SEEDING-3.32: Establishment of permanent vegetative cover by placing seed on rough graded areas that will not be brought to final grade for a year or more.

MULCHING - 3.35: Application of plant residues or other suitable materials to disturbed surfaces to prevent erosion and reduce overland flow velocities.

PERMANENT STABILIZATION

All non-paved areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be in accordance with std. & spec. 3.32, permanent seeding. seed type shall be as specified for "minimum care lawns" and "general slopes" in the handbook. mulch (straw or fiber) shall be used on all seeded surfaces. In all seeding operations seed, fertilizer and lime shall be applied prior to mulching.

MANAGEMENT STRATEGIES

1. Construction shall be sequenced so that grading operations can begin and end as quickly as possible.
2. Isolate trenching for utilities and drainage from downstream conveyances in order to minimize perimeter controls.
3. All cut and fill slopes shall be seeded within seven (7) days of achieving final grade.
4. All erosion and sediment control practices shall be maintained until they are no longer required to comply with the contract documents or state law. Only after inspection and approval from WVWA may items be removed following the stabilization of contributing areas.

INSPECTIONS

The general contractor shall inspect disturbed areas of the site that have not been finally stabilized, and areas used for storage of materials that are exposed to precipitation, structural control measures, and the area of construction vehicle access at least every fourteen (14) calendar days, and within forty-eight (48) hours of the end of a storm event producing 1/2" or greater of precipitation. Where areas have been finally or temporarily stabilized or runoff is unlikely due to winter conditions (site is covered with snow, ice, or frozen ground exists) such inspections shall be conducted at least once every month.

Inspect disturbed areas and areas of materials storage that are exposed to precipitation for evidence of, or the potential for sediment entering the storm drain system. Inspect E&S controls in accordance with requirements stated herein, and inspect points of storm drain discharge for excessive sedimentation. Correct site controls as required to reduce sedimentation of storm drains, culverts, and receiving channels.

If controls or sediment prevention areas are found to be in need of repair or modification, the general contractor shall provide additional measures or modifications to existing measures as required. any additional measures or modifications to existing measures shall be recorded as field revisions to these plans. In the event that additional controls are found to be required, the general contractor shall be responsible for implementing these controls before the next anticipated storm event. If implementation before the next storm event is impractical, they shall be implemented as soon as practical.

A report summarizing the scope of inspections, name of inspector, inspector's qualifications, dates of inspections, major observations pertaining to the implementation of these erosion control plans, and actions taken shall be made and retained as a part of these plans. Major observations of these reports shall include: the locations of excessive sedimentation from the site; locations of controls in need of repair; locations of failed or inadequate controls; and locations where additional controls are needed.

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GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: Unless otherwise indicated, construct and maintain all vegetative and structural erosion and sediment control practices according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook, and Virginia regulations vr 625-02-00 erosion and sediment control regulations.

ES-2: WVWA inspectors will make a continuing review and evaluation of the methods and effectiveness of the e.s.c. plan.

ES-3: Place all erosion and sediment control measures prior to or as the first step in clearing, grading, or land disturbance.

ES-4: Maintain a copy of the approved erosion and sediment control plan on the site at all times.

ES-5: Prior to commencing land-disturbing activities in areas other than indicated on these plans (including, but not limited to, offsite borrow or waste area), submit a supplementary erosion control plan to the architect/engineer for review and acceptance.

ES-6: Provide additional erosion control measures necessary to prevent erosion and sedimentation as determined by the local authority having jurisdiction.

ES-7: All disturbed areas shall drain to approved sediment control measures at all times during land-disturbing activities and during site development.

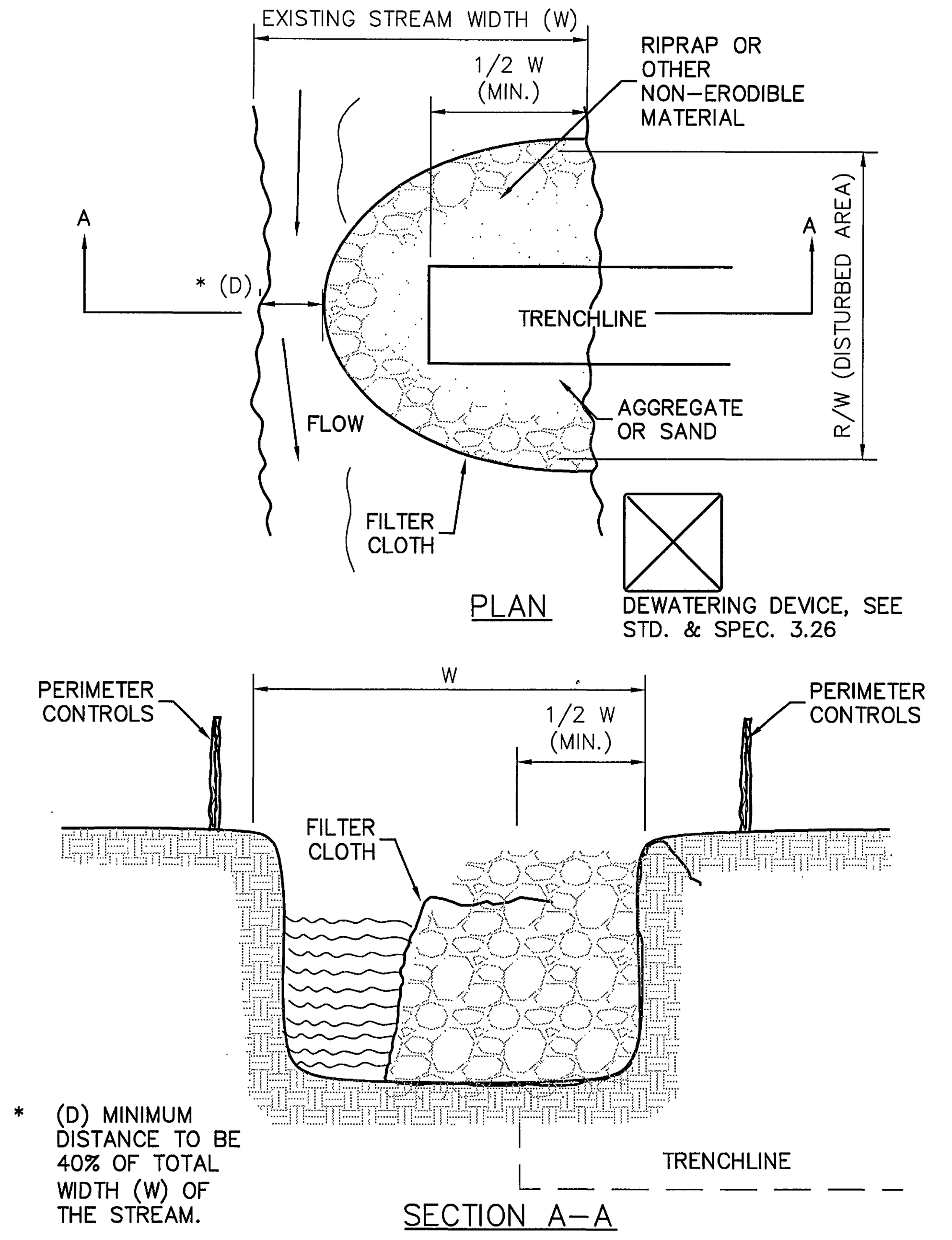
ES-8: During dewatering operations, pump water into an approved filtering device.

ES-9: Inspect all erosion control measures daily and after each runoff-producing rainfall event. Make any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices immediately.

MINIMUM STANDARDS

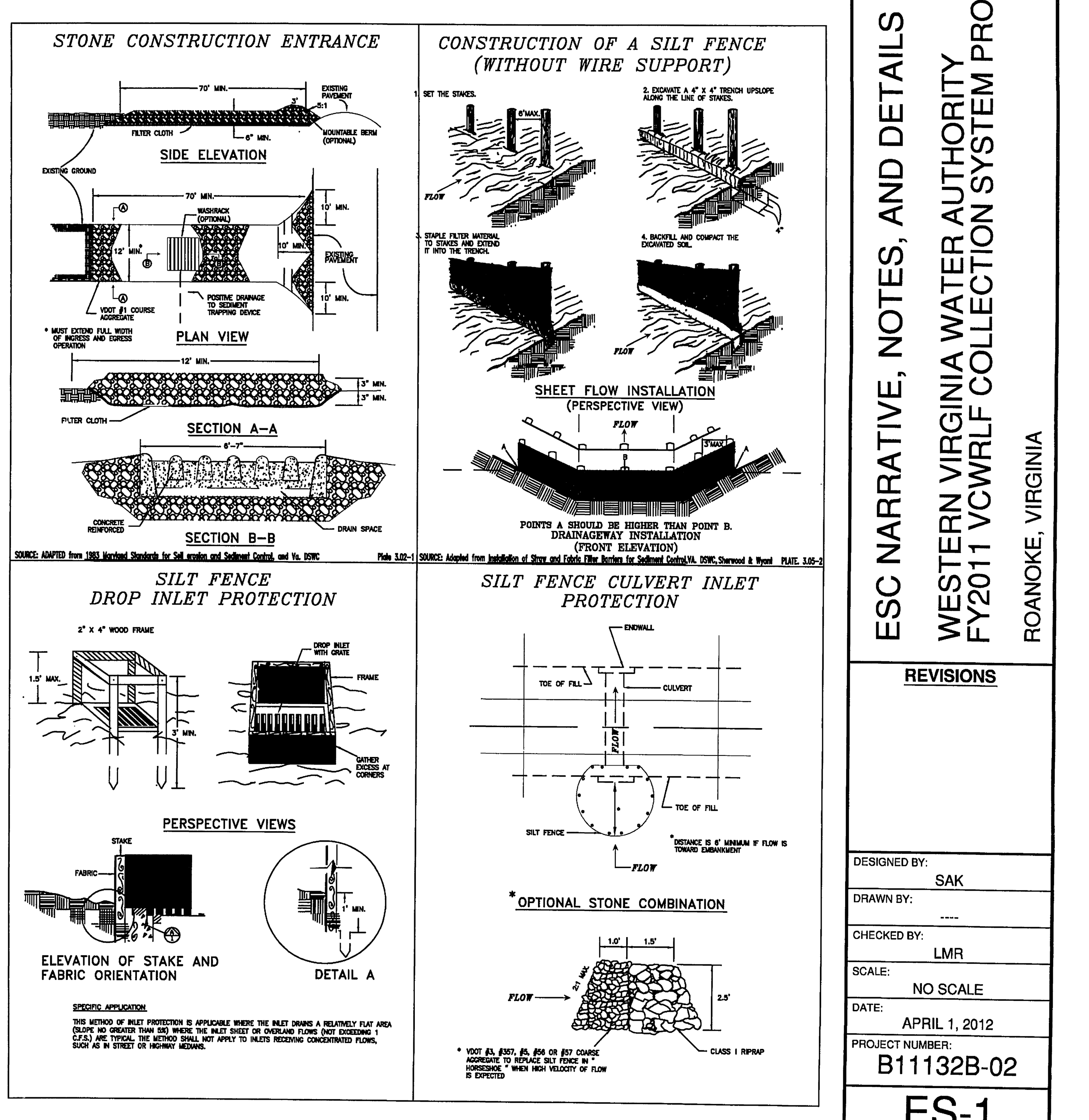
The following standards are to be provided or addressed on every development project exceeding 10,000 S.F. in area of disturbance. These standards are considered a minimum and may require additional measures as deemed necessary by the local approving authority or the consulting engineer.

No.	CRITERIA, TECHNIQUE OR METHOD	PRACTICES PROVIDED
1	Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade has been reached on any portion of the site. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may be at final grade but will remain dormant (undisturbed) for longer than thirty (30) days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one (1) year.	(TS) (PS) (MU) FOR ALL DENUDED AREAS
2	During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The contractor is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as soil intentionally transported from the project site.	(TS) (PS) (MU) FOR PROVIDED STOCKPILE
3	A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the WVWA, is uniform, mature enough to survive and will inhibit erosion.	(TS) (PS) (MU) FOR ALL DENUDED AREAS
4	Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.	(ST) FOR ALL DRAINAGE DIVIDES
5	Stabilization methods shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.	(TS) (PS) (MU) FOR ALL EARTHEN STRUCTURES
6	Sediment traps and basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.	SEE SUPPLEMENTAL CALCULATIONS
7	Cut and fill slopes shall be constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one (1) year of permanent stabilization shall be provided with additional slope stabilization measures until the problem is corrected.	(TS) (PS) (MU) FOR ALL ERODING SLOPES
8	Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.	(SCC)
9	Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.	SHOULD SEEPS OCCUR IN ANY EXISTING OR NEW CUT OR FILL SLOPE, THE CONTRACTOR SHALL FIRST INSURE THAT THERE ARE NOT AREAS OF PONDED WATER AT THE TOPS OF THE SLOPES, AND THEN SHALL CONTACT BOTH THE DESIGN ENGINEER AND THE PROJECT GEOTECHNICAL ENGINEER FOR ON-SITE EVALUATION OF THE AREAS OF SEEPAGE.
10	All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.	(IP) (CIP) FOR ALL STORM WATER INTAKES
11	Before newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.	(RR) (OP) FOR ALL STORMWATER OUTLETS
12	When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.	(SF) FOR THE PROTECTION OF THE NATURAL WATERCOURSE
13	When a live watercourse must be crossed by construction vehicles more than twice in any six (6) month period, a temporary stream crossing constructed of nonerodible material.	PERMANENT CROSSING
14	All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met. The beds and banks of any watercourse shall be stabilized immediately after work in the watercourse is completed.	(TS) (PS) (MU)
15	The beds and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.	(TS) (PS) (MU)
16	Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria: 1) No more than 500 linear feet of any trench may be opened at one time. 2) Excavated material shall be placed on the uphill side of trenches. 3) Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property. 4) Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization. 5) Restabilization shall be accomplished in accordance with these regulations. 6) Applicable safety regulations shall be complied with.	NOT APPLICABLE
17	Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.	(CE) FOR ALL POINTS OF INGRESS/EGRESS
18	All temporary erosion and sediment control measures shall be removed within thirty (30) days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program administrator. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.	(TS) (PS) (MU)
19	Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the applicable criteria.	SELF-EXPLANATORY SEE PLANS & CALC'S



(USC) COFFERDAM CROSSING DETAIL

NOT TO SCALE



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ESC NARRATIVE, NOTES, AND DETAILS

WESTERN VIRGINIA WATER AUTHORITY
FY2011 VCWRLF COLLECTION SYSTEM PROJECTS
ROANOKE, VIRGINIA

REVISIONS

DESIGNED BY:	SAK
DRAWN BY:	----
CHECKED BY:	LMR
SCALE:	NO SCALE
DATE:	APRIL 1, 2012
PROJECT NUMBER:	B11132B-02

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